



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,732	07/01/2003	Aoi Tanaka	10059-471US (P31327-01)	7365
570	7590	10/28/2005	EXAMINER	
AKIN GUMP STRAUSS HAUER & FELD L.L.P. ONE COMMERCE SQUARE 2005 MARKET STREET, SUITE 2200 PHILADELPHIA, PA 19103			KALAFUT, STEPHEN J	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 10/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/611,732	TANAKA ET AL.	
	Examiner	Art Unit	
	Stephen J. Kalafut	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>01 July 2003</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1745

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Bevers (US 5,738,905).

Bevers discloses a fuel cell with a membrane electrode assembly, which comprises a proton-conductive membrane (34), a pair of catalyst layers (50) and a pair of gas-diffusion layers (52). The powder used in the catalyst layers includes Pt carried on carbon, and a solid electrolyte material (column 5, lines 14-24). The catalyst may be applied as several sub-layers (50, 50a, 50b), where the polymers therein undergo greater degrees of melting toward the membrane, and less melting toward the gas-diffusion layers (column 6, lines 17-39). Since the sub-layers are made of the same powder, this would mean that their density is greater near the membrane, while the relative proportions of their constituents stay the same throughout the catalyst layer. The powders are formed onto copier drums (10, 12), with the first sub-layer being transferred to the membrane, and each succeeding sub-layer transferred onto the one immediately preceding it. Due to the use of heat sources (36, 38), the transfer would be a thermal transfer. The drums would thus operate as transfer sheets, and would also press each sub-layer as it is applied (column 5, lines 44-47). See also column 3, lines 14-29.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bevers in view of Sompalli *et al.* (US 6,524,736).

If the rollers of Bevers are not considered to be sheets, these claims would differ from Bevers by reciting the use of sheets upon which to form the catalyst sub-layers and transfer them to the membrane or previously applied sub-layers. Sompalli *et al.* disclose a process for forming catalyst layers on a substrate, called a decal, applying the layer to a polymer electrolyte membrane, and removing the decal (column 7, lines 41-67). The decal disclosed by Sompalli *et al.* provides “good transfer of the catalyst onto the membrane” (column 7, line 58), and allows for the vaporization of any residual solvent left in the electrode or membrane (column 7, lines 60-66). The catalyst of Bevers may be applied in a wet chemical process (column 5, lines 32-35), thus raising the possibility of residual water in his catalyst layer. For these reasons, it would be obvious to use the decal substrate of Sompalli *et al.* to form and apply the catalyst sub-layers of Bevers to his membrane, and previously applied sub-layers.

The disclosure is objected to because of the following informalities: On page 22, line 18, the numeral 11 is used to indicate both an “electrolyte membrane” and a “catalyst layer”. On page 33, lines 4 and 8, the numeral 45 is used to indicate both “gas flow channels” and

Art Unit: 1745

“separator plates”. The abstract comprises two paragraphs instead of one. Appropriate correction is required.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tozawa *et al.* (US 5,607,785) disclose multilayer fuel cell electrodes, where the layers include differing amounts of ion-conductive polymer. Wilkinson *et al.* (US 5,874,182) disclose fuel cell electrodes having catalyst powder, sometimes with ion-conductive polymer powder, dispersed within a conductive porous substrate, in various non-uniform arrangements. Shelef (US 6,117,581) discloses a fuel cell electrode having two layers, one with carbon and the other with zeolite, as catalyst supports. Fukuda *et al.* (US 6,720,106) disclose a fuel cell in which part of the catalyst powder is pressed into the outer surface of the electrolyte membrane.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sjk



STEPHEN KALAFATIS
PRIMARY EXAMINER
GROUP 1700